Ecological and Archeological Presentation of the Canashito Site in Aruba, Netherlands Antilles

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" Think you that the rounded rock marked with parallel scratches, calls up as much poetry in an ignorant mind as in the mind of a geologist, who knows that over this rock a glacier slid a million years ago? The truth is, that those who have never entered upon scientific pursuits are blind to most of the poetry by which they are surrounded. Whoever has not in youth collected plants and insects, knows not half the halo of interest which lanes and hedge-rows can assume. Whoever has not sought for fossils, has little idea of the poetical associations that surround the places where imbedded treasures were found."

Herbert Spencer

limestone and rather extensive deposits of Pleistocene limestone. Aruba has a barrier reef. The reef lies about 4oo yards off shore, and extends discontinuously along the southwest coast between Punta Basara and Oranjestad. It is composed of coral and capped by a beach ridge of coral fragments 2-10 feet in height. On the seaward side the reef extends to a depth of at least 15o feet. The soil derived from the diabase is inherently fertile.

The vegetation of Aruba has a pronounced xerophytic character, and thorny shrubs and cactuses are predominant features in the island's scenery. Irrigation is applied locally. Mangrove vegetation occurs here and there along the sea coast and the bays.

The preceeding paragraphs are an introduction to the presentation of the archeological and ecological test site in this paper. The test site is Seroe Canashito, located on the island of Aruba.

Canashito is a mountain, 70 meters high, situated approximately in the center of Aruba, facing southwest Santa Martha, to the north Seroe Bientoe and Hoojberg, to southeast the village of Santa Cruz. The south side of Seroe Canashito is stripped of its vegetation because the Aruban government is extracting materials for roadbuilding from that side (see drawing #1).

The east side of the mountain can be divided in two parts. The upper part, comprising about 3o meters of hight, is bare. It shows limestone rock with many signs of erosion; growing cactuses can be seen in the crevices. The lower part, about 4o meters in hight, reveals the rather steep sloping side of the mountain.

The area is covered with some scant vegetation, but the dominant feature are giant outcrops of milky quartz or whithe marble, which look weathered and grayish - buff from the outside; broken off a piece of it, it looks like milky quartz. Sample proved to be an excellent specimen of milky quartz which is a special variety of macrocrystalline quartz. Reason for identification: color - white, luster - nonmetallic, hardness (according to the Mohs scale) -6-7, fracture or cleavage - conchoidal, elements shown to be present by emission spectroscopy - silicon. As an illustration of the size of the outcrops, are the rock measurements taken by the author of this paper near the test site, excavation D. The measurements showed a lenght of 11 m, width 9 m, and a hight of approximately 13-15 meters. (see drawing # 2)

The mountain side facing morth can be divided in the same way as the east side. The upper part displays bare rocks with strong erosion signs, and many caves with dome-like features inside. From here the viewer is given a faraway look into the surrounding valley. The lower part of the mountain, which is slopping down steeply, is covered with aloe plants, trees and shrubs (see drawing # 3 on topographic distribution of vegetation types).

The mountain side facing west is completely stripped of its vegetation and part of it is removed for roadbuilding materials. (see drawing # 4)

The Canashito site area is conducive to all year living, since it has a fresh water habitat, the Rooi Canashito stream (during the year it dries up, occasionally. The caves are spacious inside,

and provide shelters during the rainy season. At the foot of the mountain, within the range of the fresh water supply, are coves of trees which provide shade during the warmer seasons of the year. To the east and the south-west from the foot of the mountain the valley shows agricultural land at rest, some small farms where fresh water is provided by the use of waterwheels.

Archeological findings provide us with revealing informations about the early inhabitants of the island. The search for surface material on the Canashito mountain, disclose some sapects of their economic life. The early inhabitants of the island were undoubtedly hunters (fishers) and gatherers. The refuse found on the mountain contained not only large amounts of edible shellfish, but also remains of crabs and turtle shell. It is quite apparent that the inhabitants obtained a large part of their livelihood from the sea. It can be assumed that within their economic make-up, men went out fishing, and women collected shellfish and crabs. Since Canashito has a great variety of trees, there is a variety of birds on the mountain side, facing north, which inhabit those trees. Thus, it can be conjectured that birds must have been an addition to the fish diet of the early inhabitants. There is evidence of some primitive form of agriculture, because fragments of clay griddles (16 mm in thickness), among 360 potsherds, were found and collected on the Canashito site by the author of this paper. The griddles were used for baking bitter cassava(manioc), as pointed out by Hummelinck, book 2.

Now, against the general background given in the preceeding paragraphs, let us turn our attention to some specifics,

that is,the shell artifacts and pottery on Seroe Canashito. Let us consider the shells found in this area first.

The surface material on Canashito, site " D ", covers an approximate area of 2ox2o m; it represents a shell midden on which shell artifacts as well as a variety of shells were found. Before going into the decription of the shell artifacts, it becomes necessary, from the ecological point of view, to name and describe the varieties of shells collected in this area.

1.)Pelecypoda

Order Filibranchia, Suborder Taxodonta
Superfamily Arcacea, Family Arcidae
Subfamily Anadarinae

a.) Genus Andara notabilis — Eared Ark

Florida to the Caribbean and Brasil
1½ to 3½ inches in length. About 26 ribs, crossed by fine concentric threads which are also prominent between the ribs. Young specimens (2 inches or less) are easily recogn by their quadrate shape and the prominent posterior dorsal wing, but mature specimen become more elongated and the posterior dorsal wing is less conspicuous. A very common species which lives in a shallow water on mud and grass bottom. This was listed as A. auriculata.

b.) Superfamily Tellinacea, Family Tellinidae
Genus Tellina

Subgenus Tellina laevigata — Smooth Tellin

found in Southern Florida and West Indies. 2 to 3 inches in length, oval in shape. Color whitish, faintly rayed or banded with yellow or orange. Surface smooth except for microscopic growth lines. Interior polished, white to yellow. This species has seldom been found in Puerto Ric but it is relatively common in the Virgin Islands and other parts of the West Indies.

c.) Superfamily Veneracea, Family Veneridae
Family Veneridae, Subfamily Venerinae
Genus Chione

Subgenus Chione cancellata — Cross-barred Venus

found in Southeast U.S. Texas and West Indies. 1 to 1¾ inche

1 to 1¾ inches in length, ovate to subtriangular in outline,heavy. Color ashy, often irregularly rayed with brown.Interior white, usually with some purple. Surface sculptured with many strong, concentric ridges and numerous weaker radial ribs. A common shallow-water species found all around Purto-Rico.

2.) Gastropoda

Superfamily Strombacea, Family Xenophoridae
Family Strombidae, Genus Strombus Giga,

a.) Genus Strombus Ranius — Hawk-wing conch

Found in Southern Florida and the West Indies. 2 to inches in length, solid, bluntly spinoze, the largest spines being the last 2 on the body whorl. Aperature and outher lip glazed; solomon pink inside. Color of outer shell grayish with brown motterin. There are usually heavy folds in the upper and parietal corner of the aperature. Common everywhere in Puerto Rico and the West Indies. Formerly known as S. bituberculatus Lomarck. A young specimen is illustratedon plate 24 fig.c. Caribbean Seashells.

b.) Family Ceritbiidae, Subfamily Litiopinae
Genus Litiopa

Genus Litiopa melanostoma — Brown Sargassum Snail

Found in floating Sargassum weed. ¼ inch in length, moderatly elongated with 7 whorls, the last being larger than all the others whorls combined. Color light brown and translucent. Devoid of sculpture, except for numerous, microscopic, revolving threads. There is a strong ridge just inside the aperture on the columella.

c.) Superfamily Trochacea, Family Trochidae
Genus Cittarium

Cittarium pica — West-Indian Topshell

Found southeast Florida and the West Indies 2 to 4 inches in length, conical, heavy. Color grayish white with purplish black zigzag splotches. Aperture round, large and pearly within; umbilicus wide and deep. Operculum horny, circular, and multispiral. Called " burgao " by the natives and as a food. Very common on and under coral rocks in Puerto Rico.

d.) Family Xancidae, Subfamily Vasinae
Genus Vasum

Vasum muricatum — Caribbean Vase

Found in half of Florida and the West Indies. 2½ to 4 inches

bearing short blunt spines at the shoulder of the whorls. Color dull-white, usually covered with a thick dark-brown periostraeum. Spire flat-sided. Columella bears 5 folds. Aperature large, elongate, shiny-white, usually tinged with purple. Opericulum dark-brown, thick horny, and fillin most of the aperture. Very common in shallow water.

3.) Neogastropoda

Superfamily Muricacea, Family Muricidae
Subfamily Muricinae , Genus Murex Linne 1758
Subgenus Chicoreus Montfort 1810

a.) Murex brevifrons West Indian Murex

found in lower Florida Keys and West Indies. 3½ to 6 inches in length, very spinoze. Color variable. Ti may be unicolor cream to dark-brown or with many brown spiral bands. Interior of aperture glosy-white. There are 3 axial varices which possess many frond-like spines (the spines are sometimes lost in beach-worn specimens). A common shallow-water species, commonly found on the mangrove roots where it feeds on oysters.

Shell artifacts.

out of the existing variety of shells, a great number of shell artifacts did emerge among the early inhabitants. It should be noted that shell artifacts are characteristic features of preceramic cultures whose survival into ceramic times is quite possible, as proven by the finds on Canashito site. Let us enumerate some of the artifacts found in this area:

1.) Shell gouge made from outer whorl of the conchshell, is triangular in shape, edges ground to facets. The outer side of whorl is untouched; the inner side (the lip part) is ground and worked to the proper tickness. The remainder of the object is left rough.The measurements of the object: 13.5 cm length, 5 cm wide, and 11 mm thick.

2.) Shellspoon made of the inner whorl of the conchshell. It is oval in shape, with a raised small flat surface at one end so as to rest the tumb when holding the spoon in the hand. The inside is smooth, and the

outer side is rough. It could have been used as a scooping utensil as well. The size of the described object 9 cm length, 8 cm width and the depth from the tumbs flat spot shows 3.5 cm.

Stone artifacts

1.) Polished axe-head (celt) of greenish-gray volcanic tuff. This tool indicates the Stone age, and is associated with the Meso-Indian industry of Venezuela, brought to the island around 500 A.D.The celt indicates percussion flaking; most of the surface was ground down by rubbing on a slab of wetted sandstone, or other hard rock. This celt seems to have been used as a hammer to crack open the conchshells and take out the snail that made up a large part of the food supply of the inhabitants of Aruba.

2.) Flint hand-axes of black and gray flint, and scrappers of different sizes.

One addition to the shell artifacts. A small shell tool, about 4.5 cm long, could have been used as a scraper on one end the other end shows shows a sharp point possibly for making holes. It could also have been used for making designs on pottery before firing. In tthis context I should note that as an artist I tried to use this tool for embossing purposes, with quite satisfactory results.

Pottery

Now, let us turn our attention to the pottery found in this area. Pottery fragments collected on the surface of Seroe Canashito exhibit a variety of styles. Most of the potsherds are of crude making, and without any polychrome design decorations. From among 350 fragments collected by the author of this paper, only 30 sherds displayed rims, and were decorated with designs. Some of the fragments show corrugated

rimsherds revealing the coiling method as manufacturing technique, some show paddle and anvil impressions. One peice of potsherd indicates the use of a very smooth polishing technique. The tempering has been done with grit and shells. Some of the potsherds were made out of fine grit with sparkles in it. It can be assumed that Smooth tellin (Tellina laevigata) and Haliotis shells were grinded to powder, and mixed into the grit that produced the fine grit pots. The surface colors range from red, brown, black, white, yellowish-gray and full gray. Some show badly controlled firing and subsequently, show up patches of black and gray on the fragments.

Potsherds found in the Canashito area belong to the Savaneta and Santa Cruz styles, which, in turn, belong to the Dabajuroid series. The latter term is derived from Dabajuro, a place in Venezuela, not far from the coast, and located between the lake of Maracaibo and the Paraguana peninsula. One sherd from a pottery disc indicating trade ware probably came from north-eastern part of Venezuela. All in all, comparing sherds with previous archeological findings, it appears that some of the pottery was brought to Aruba by trade from the Venezuelan mainland and, again most of the pottery was produced on the island. Much of the pottery is simple and coarse in making, but quite adequate to satisfy the every day needs of a small community.

The general informations about the mountain Canashito given in previous paragraphs, as well as those given on the shell midden, make reference to map E 13/1-R-5 (1:5000), and quadrant D 1o25ox14125,

Now, let us turn our attention to some specifics, that is, to the excavations which were performed one the above mentioned quadrant.

It has to be mentioned here, that this was a test excavation and the material found could nat be enumerated completely. It consited of two pits, 1x1 m each, and 4o cm in depth. The soilcin the excavated pits showed surface sand, dand mixed with ashes to approximate depth of 3o cm; charcoal on the south-west side of the pits and extending further and beyond the excavated squares. The charcoal appeared to be in great abundance.

Pit # 1.

Surface material: Pieces of limestone, shells predominantly the Ark shell and conch and goat bones, turtle shell.

0 - 10 cm: 1 slabstone length 25 cm, width 2o cm, tickness 5 cm surrounded by shells (Smooth Tellin, Haliotis Rufescer brown Sargassum snails).To the south-east of the square the soil was packed with shells. Pieces of wood, and flint stone.

1o - 2o cm Shells, snails, fragment of human rib, crystaline quartz and chared shell.

2o - 3o cm crab claws, remains of Sargassum snails and Murex snails, piece of shell scraper worked and a fossilized shell.

3o - 4o cm Soil yellow and gritty but continued to show charcol on the south-west side of the pit.

Pit #2

Surface material: Pieces of stone, shells and pottery.

0 - 1o cm gray sand intermixed with shells, bones, 3 pieces of pottery tempering with grit and very little shell, color black, black on brown and gray.

1o - 2o cm pieces of crystaline quartz, fragments of ~~xxxwn~~ bones of brown color, Limpet shells, pebble stones, flaked core scrapers, one worn tooth (possibly a canine) pieces of very decorative shells, chared rimsherd.

2o - 3o cm shell scraper worked, pieces of chert worked, chips of flint stone with a concave side worked.

30 - 40 cm This layer shows a change in soil from sandy to yellow grit and some shells in between

A test digging along the charcoal side as deep as 60 cm revealed a continuation of the same material.

The archeological remnants found on the Canashito mountain testify about the inhabitants who once lived here, they also provide us with some sound clues about their culture and economic life. But the question which is pushing itself into the forefront of any consideration is this: who were those inhabitants? When and from where did they come from?

When and by whom Aruba and, for that matter, the West Indies were first settled is a matter of debate among archeologists. In an article entitled " Early Man in the West Indies " by J.M.Cruxent and I. Rouse (Scientific American, Nov. 1969), it is suggested that some of the islands were already populated a few thousand years ago. The The authors also note that when the Spaniards reached the area, they found that the Lesser and Greater Antilles were inhabited by Indians who spoke Cariban and Arawakan, languages that are widespread in eastern South America. The inhabitants' material culture belonged to the final Pre-Columbian age, a period of development in the Caribbean area. Given the geographic condition, one can assume that Aruba was populated from South America. The distance from Aruba to the peninsula of Paraguana is only 27 kilometers, therefore, it must have been very conducive for canoe navigation.

The first people who came to the island were of low cultural level. They knew nothing of pottery. They made their distinctive artifacts by grinding stone, and by chipping flakes of flint. They did not know farming and were feeding themselves on sea food, wild ve-

gatables, and collecting shellfish in shallow waters. The test site was indicative in that respect. The refuse deposit contained numerous shellfish, turtle bones, charcoal, shell tools, and crudly chipped stone tools (similar to the ones found at El Jobo in the Pedral Region gion of the Falcon state in Venezuela). Particularly those people who were skilled in the use of stone tools must have moved from the mainland to the island.

The very early inhabitants of Aruba must have been overrun, later on, by people of a higher culture, who knew how to make pottery, had knowledge of farming, and were skilled mariners.Many finds on Canashito link the inhabitants archeologically to north-west Venezuela, especially peninsula Paraguana, with which traffic was presumably intense.

Supplement

Samples of rocks collected by the auther of the paper at the Canashito site in Aruba, and analyzed in the Dept. of Chemistry, Rensselaer Polytechnic Institute by M. Dahn.

Sample 1 -

Identity - milky quartz
Reasons for identification:
Color - white
Luster - nonmetallic
Hardness (according to the Mohs scale) - 6-7
Fracture or cleavage - conchoidal
Elements shown to be present by emission spectroscopy - silicon
This is an excellent specimen of milky quartz which is a special variety of macrocrystalline quartz.

Sample 2 -

Identity - macrocrystalline quartz
Reasons for identification:
Color - white with streaks of redish iron oxide
Luster - nonmetallic
Hardness - 7
Cleavage - conchoidal
Elements shown to be present by emission spectroscopy - silicon and traces of iron
This is a rather impure sample of milky quartz.

Sample 3 -

Identity - macrocrystalline quartz
Same characteristics as sample two.
Apparently this sample is extremely old since it is well rounded and smooth which is uncommon to quartz. Since quartz is extremely hard (harder than glass), physical weathering must have operated on this sample for a long period of time to get

it so smooth. (Chemical weathering can play no major part in shaping this rock since quartz is inert toward most chemicals. Since physical weathering is generally slower than chemical weathering, the sample's old age is further emphasized.)

Sample 4-

Identity - travertine which is a limestone

Reasons for identification:

Color - tan

Luster - nonmetallic

Hardness - 3

Cleavage - one direction

Elements shown to be present by emission spectroscopy - calcium, iron

If a sample of this material is treated with concentrated hydrochloric acid, a vigorous reaction ensues with the liberation of carbon dioxide. This strongly indicates calcite as a major component of this material. After this treatment, a small portion of the material tested remained undissolved. It was found to be iron oxide. Therefore, it was concluded that this sedamentary rock was a limestone composed of approximately 99% calcite and 1% iron oxide. It is characteristicly banded with alternating light and dark layers resulting from minor amounts of iron oxide which accumulate during successive periods of deposition.

Sample 5 -

Identity - possibly belonging to the garnet family but this is uncertain

Reasons for identification:

Color - black (this is unusual for garnets but black garnets are not rare.)

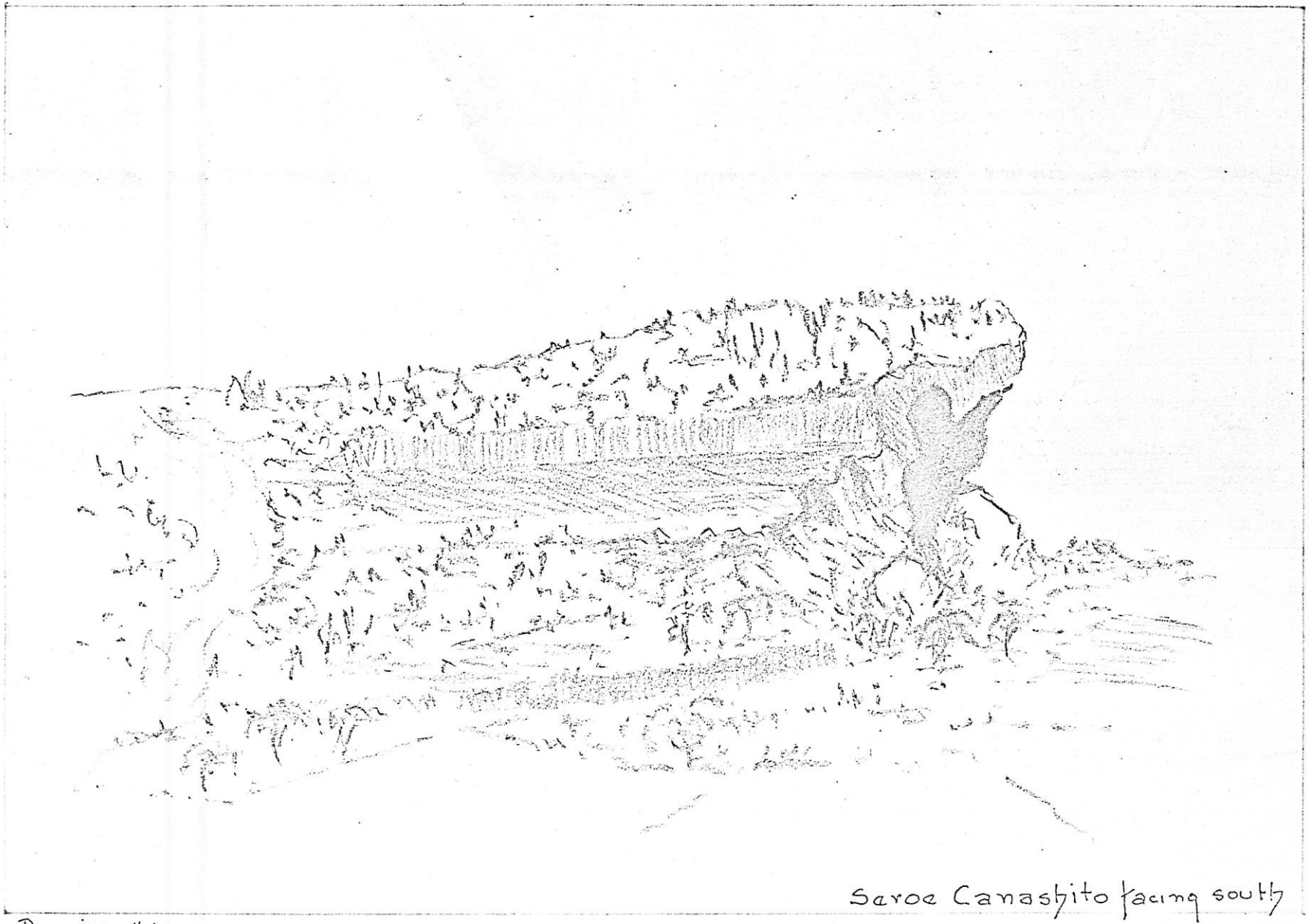
Luster - nonmetallic

Hardness - greater than 7

Cleavage - conchoidal

Elements shown to be present by emission spectroscopy - iron, magneseum (although other elements may be p

present here, they could not be identified unambiguously).



Saroe Canashito facing south

Drawing #1

Saroe Canashito facing East

Drawing #2

Topographic distribution of vegetation types on the north side of Canashito

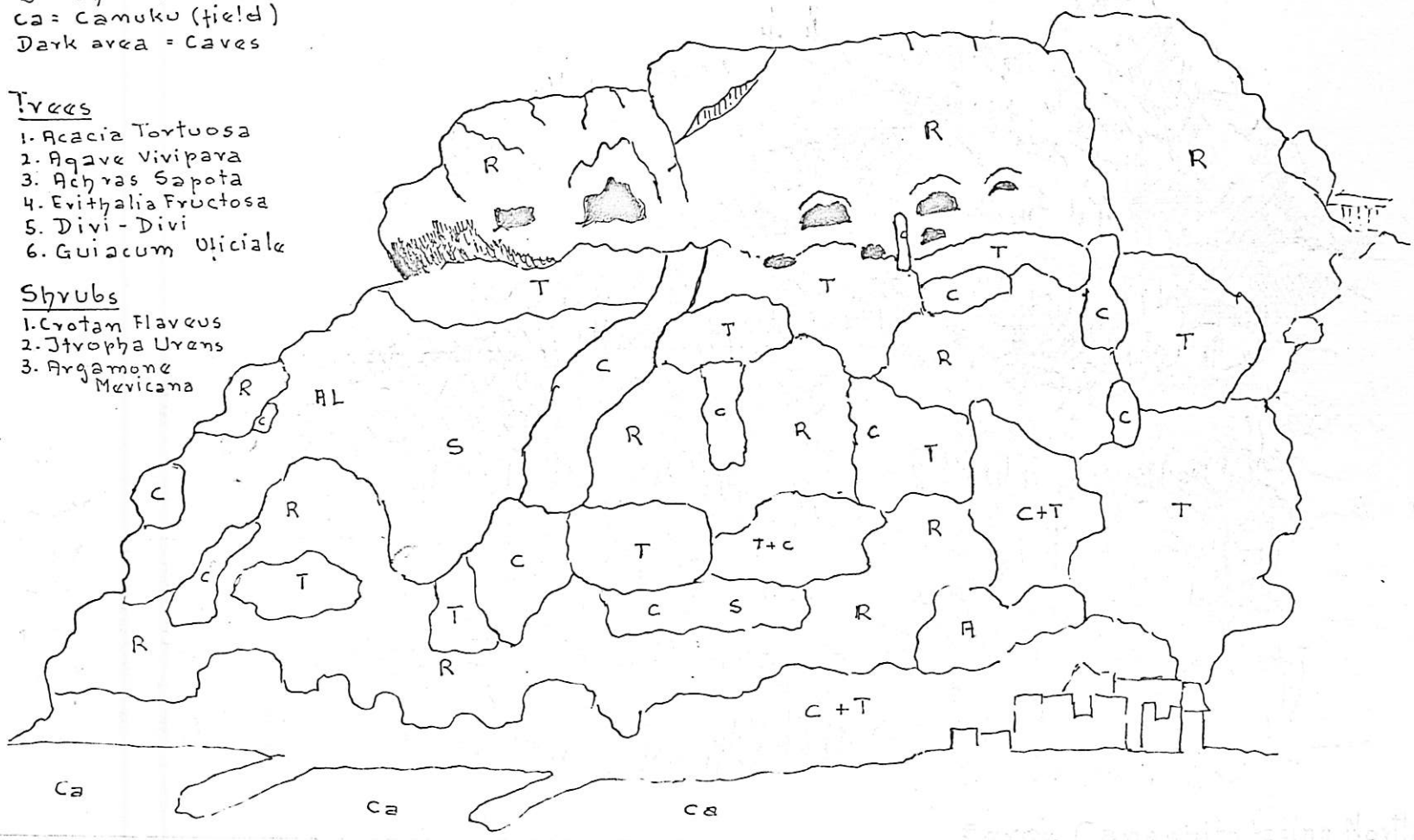
R = Rock
T = Trees
C = Cactus
A = Agave
AL = Aloes
S = Shrubs
Ca = Camuku (field)
Dark area = Caves

Trees

1. Acacia Tortuosa
2. Agave Vivipara
3. Achras Sapota
4. Evithalia Fructosa
5. Divi - Divi
6. Guiacum Officiale

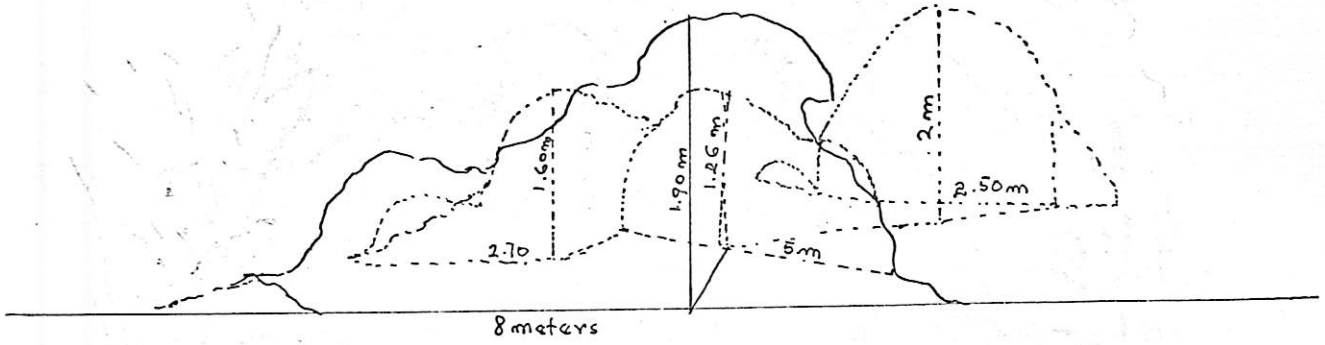
Shrubs

1. Crotan Flaveus
2. Jtropha Urens
3. Argamone Mexicana



Seroe Canashito facing West

Drawing #4



Cave A with Petrographs

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